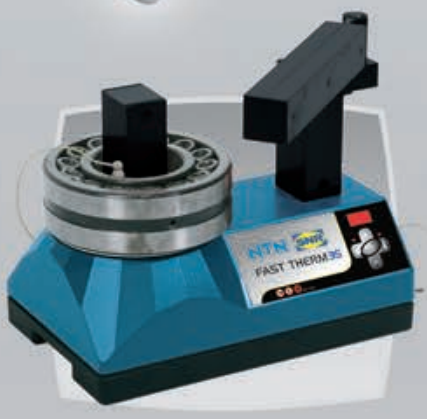
Experts & Tools WITH YOU



INDUSTRY

Maintenance tools

« Bringing you a complete tools and services solution for your bearings, suited to your application, size and resources »

Experts & Tools

NTN-SNR Experts & Tools, at the service of our customers

Because expectations for the maintenance and mounting of bearings are specific to each customer, **Experts & Tools** offers you solutions that take into account your application and its importance to you as an available resource.

Each application requires special expertise. Maintaining a wind turbine is different to maintaining a printing press or a meat mincer. With the theoretical and practical experience we have accumulated over almost a century of dealing with industrial applications, NTN-SNR can provide you with the expertise and tools you need.

The scale and difficulty of your mounting and maintenance tasks determine our recommendations.

We provide a customised response in terms of tools and organisation, suited to your situation.

The NTN-SNR Group, with more than 21,000 employees worldwide, produces and improves maintenance tools and methods on a daily basis. Our aim is to bring you products and procedures that are safe and easy for your staff to use. The design of our tools is aimed at increasing your efficiency. By reducing the amount of time it takes for mounting, dismounting as well as maintenance operations, and by maximising the working life of your bearings, our tools provide you with real savings and safety in use and will not damage the machinery they are being used on.

This catalogue contains the entire range of NTN-SNR maintenance tools. Our range of greases, greasers and centralised lubrication systems is contained in a separate catalogue.

And if you decide to sub-contract your maintenance operations ?

The **Experts & Tools** teams can take care of this, based on agreed availability targets for your machinery.

Experts & Tools offers you a range of services that can be customised to meet your specific requirements:

- Theoretical and practical **training** for your employees
- **Diagnostics** on your damaged bearings (on site or in our laboratories)
- **Supervision** of the dismounting or mounting of your critical bearings. Of particular interest for larger bearings where we can supply appropriate tools, including handling tools.
- **Rental** of maintenance tools: bearing heaters, hydraulic nuts and pumps, etc.
- **Audits** of the daily operation of your industrial maintenance organisation
- **Survey** of your lubrication installations or an analysis of your needs, with the production and installation of appropriate standard or customised equipment.
- **Renovation** of bearings removed from equipment as part of a preventive maintenance programme
- **Vibration diagnostics** of rotary machinery or the establishment of a data collection programme for monitoring vibrations in your machinery.

NTN-SNR accepts no liability for any errors or omissions that may inadvertently appear in this catalogue, despite all the care taken in its production. Due to our policy of continuous research and development, we reserve the right to make changes without notice to all or part of the product information and specifications contained in this document.

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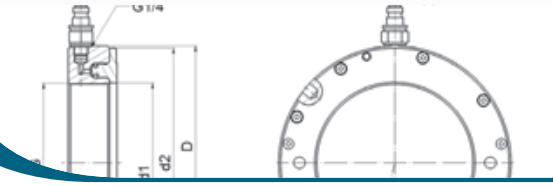

P. 44 4 - GLOSSARY

BALL PLUG 1/4	
NIPPLE 1/4	Quick coupling connector, ¼" g (male)
size / Max size) /	Articulated manual hook spann
Fitting	piece mounting tool kit

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MOUNTING CONTENTS

THE ADVICE OF THE EXPERTS

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THE ADVICE OF THE EXPERTS

Mounting a bearing: an essential stage which determines the life span and correct operation of the installation.

The monitoring of the millions of NTN-SNR bearings sold has allowed us to establish very precise statistics on the origin of faults. This collection of data highlights one essential fact: it is rare that the bearing itself is the cause of a premature failure.

***In 90% of cases,** the cause can be found in external components which can be classified into four categories:*

INADEQUATE LUBRICATION (55%)

Inadequate or poor lubrication severely reduces the working life of a bearing.

It is often neglected because of bearing accessibility problems and a lack of knowledge about lubricants on the part of the user.

The choice of lubricant, the method, the quantity to apply to the bearing (neither too much nor too little) and the monitoring frequency must be properly studied.

NTN-SNR offers you a special service and markets a complete range of greases covering all applications, as well as an automatic greasing system.

POLLUTION (18%)

The environment in which bearings operate is often highly polluted. Dust, liquid detergents, and other contaminants can severely reduce the working life of a bearing.

To deal with these problems, NTN-SNR has developed a comprehensive range of sealing systems and will be pleased to advise you on the best choice for your application.

INCORRECT MOUNTING (17%)

The mounting of a bearing on a machine is a key stage in determining the length of its life. A bearing that is not mounted correctly can deteriorate very quickly.

The main causes are:

- *insufficient or poorly adapted methods and resources,*
- *contamination during mounting,*
- *the use of force during mounting,*
- *poor preparation of the receiving components: shafts and housings outside tolerance, poor access for the lubricant, misalignment.*

Abnormal noise levels can be a warning sign of deterioration. In the short term this causes fatigue of the bearing surfaces. NTN-SNR can provide you with mounting and dismounting services or tools and equipment to make these operations easier and more secure.

FATIGUE (10%)

Bearings are key components and are subject to fatigue. Even more so since they rarely operate in ideal conditions (overloaded machine, insufficient lubrication, etc.)

The stresses that active surfaces of bearings are subjected to create surface pitting damage sooner or later.

Our monitoring methods and support from our experts will enable you to act on the first indication of failure and organise appropriate maintenance operations.

▶ Cold mounting is the simplest method and is suitable for small and medium-sized bearings, completed with the normal adjustments.

The most frequently observed problems:

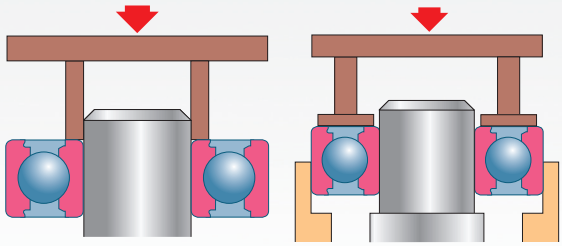
- Over- or under-tightening when adjusting
- Excessive impacts during mounting or forces causing rings and seals to break, or races to become indented.
- The accidental introduction of particles or liquids present in the mounting environment.

OUR RECOMMENDATIONS:

▶ 1st rule : the bearing must be firmly fixed to the rotating part

	Analysis of rotation (% Incidence)		Retention method
Load stationary with respect to the outer ring	Stationary housing and load (95%) Rotating inner ring	Rotating housing and load (0,5%) Stationary inner ring	Inner ring interference-fitted on shaft
Load stationary with respect to the inner ring	Stationary shaft and load (3%) Outer ring rotating	Rotating shaft and load (1,5%) Outer ring stationary	Outer ring interference-fitted in the housing

▶ 2nd rule : the sleeve is mounted by means of impact rings applied against the bearing ring which has the tightest fit. This avoids stressing the rotating body and damaging the bearing.



▶ Special case of a long shaft for an assembly requiring a longitudinal adjustment of the bearing: it is preferable to use a mechanical coupling with a tapered seat joined to a bearing with a tapered bore.

▶ THE WORDS OF AN NTN-SNR EXPERT:

For easier mounting and to avoid contact corrosion of the shaft or the housing, always use an anti-fretting paste. This thick lubricant helps preserve the quality of parts surfaces subjected to sliding forces. Without this compound, corrosion would progressively cause the fit between bearing and shaft (or housing) to deteriorate, ultimately leading to vibrations and even the premature deterioration of the bearing and its mounting surfaces.

Avoid introducing contaminants when mounting (swarf, liquid, etc.)

Recommendations:

- Check bearing identifying marks against drawings, specifications and procedures.
- Check that bearing seat dimensions and the accuracy of their shape and position correspond to NTN-SNR drawings and specifications.
- Prepare all equipment, tools and parts required before commencing assembly. Ensure that everything is clean.
- Carefully clean and check all parts and devices in the bearing's environment.
- Remove the bearing from its packaging at the last moment in a completely clean working area.
- Never wash it, except in specified exceptional cases. The bearing is protected from oxidation by a light film of oil compatible with all lubricants.
- Mount the bearing, using the chosen method.
- Lubricate, using a special bearing grease, following the instructions given.
- After mounting and before final start-up, check its operation, so as to detect any possible anomalies (noise, vibrations, temperature, abnormal play, etc.).

MOUNTING TOOL KIT CASE

The NTN-SNR tool kit enables the quick and accurate mounting of bearings in complete safety.

31

APPLICATIONS

The right combination of impact ring and mounting sleeve ensures the effective transmission of mounting force.

The simultaneous support of the outer and inner rings prevents the risk of deterioration of the races and rotating assemblies.

The kit can also be used for assembling other components such as sealing rings, pinions and pulleys.

ADVANTAGES

Of light and strong construction for workshop use, this toolbox contains:

33 impact rings:

- very robust for a long working life
- in impact-resistant, synthetic material, avoiding any metal-to-metal contact
- ideal for use in conjunction with a press
- calibrated for approximately 400 different bearings
- with bore diameters between 10 and 50 mm
- and with outside diameters between 26 and 110 mm
- clearly and permanently identified to aid selection

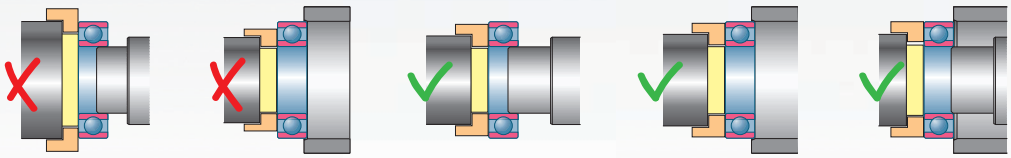
3 mounting sleeves:

- light and extremely robust, made of aluminium
- with a good grip for the hand

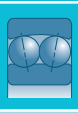
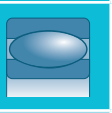
1 special dead blow mallet, ensuring optimum impact force is applied.

COMMERCIAL REFERENCE

TOOL IFT SET 33 / Industry Fitting Tool Set



TECHNICAL DATAS

Ref. Sleeves	Ref. Rings	Series 60 62 63 64 16 62/ 63/98	Series 622 623 630	Series 12 22 13 23	Series 72 73	Series 32 52 33 53	Series 213 222 223	Series 10 2 3 22 23	Series C22 C40	Series 42 43
										
A	10 / 26	629	63000	129						
		16100								
		6000								
	10 / 30	6200	62200	1200	7200	3200				4200
				2200		5200				
	10 / 35	6300	62300							
	12 / 28	6001	63001							
		16101								
	12 / 32	6201	62201	1201	7201	3201				4201
				2201		5201				
	12 / 37	6301	62301	1301	7301					4301
				2301						
	15 / 32	16002	63002							
		6002								
	15 / 35	6202	62202	1202	7202	3202		202		4202
				2203		5202				
	15 / 42	6302	62302	1302	7302	3302				
				2302		5302				
	17 / 35	16003	63003							
		6003								
	17 / 40	98203	62203	1203	7203	3203		203		4302
		6203		2203		5203		2203		4203
	17 / 47	6303	62303	1303	7303	3303		303		4303
				2303		5303				
B	20 / 42	16004	63004							
		98204								
		6004								
	20 / 47	6204	62204	1204	7204	3204		204		4204
				2204		5204		2204		
	20 / 52	6304	62304	1304	7304	3304	22205/20	304		4304
				2304		5306		2304		
	25 / 47	16005	63005					1005		
		6005								
		62/22								
	25 / 52	98205	62205	1205	7205	3205	22205	205	C2205	4205
		6205		2205		5205		2205		
		63/22								
	25 / 62	6305	62305	1305	7305	3305	21305	305		4305
		6403		2305		5305		2305		
	30 / 55	16006	63006					1006	C6006	4206
		6006								
		62/28								
	30 / 62	98206	62206	1206	7206	3206	22206	206	C2206	
		6206		2206		5206	BS2-2206	2206		
		63/28								
	30 / 72	6306	62306	1306	7306	3306	21306	306		4306
		6404		2306		5306	2306			
C	35 / 62	16007	63007					1007		
		6007								
	35 / 72	6207	62207	1207	7207	3207	22207	207	C2207	4207
				2207		5207	BS2-2207	2207		
	35 / 80	6307	62307	1307	7307	3307	21307	307		4307
		6405		2307		5307		2307		
	40 / 68	16008	63008					1008		
		6008								
	40 / 80	6208	62208	1208	7208	3208	22208	208	C2208	4208
				2208		5208	BS2-2208	2208		
	40 / 90	6308	62308	1308	7308	3308	21308	308		4308
		6406		1308		5308	22308	2308		
	45 / 75	16009	63009					1009		
		6009								
	45 / 85	6209	62209	1209	7209	3209	22209	209	C2209	4209
				2209		5209	BS2-2209	2209		
	45 / 100	6309	62309	1309	7309	3309	21309	309		4309
		6407		2309		5309	22309	2309		
	50 / 80	16010	63010					1010	C4010	
		6010		1210						
	50 / 90	6210	62210	2210	7210	3210	22210	210	C2210	4210
						5210	BS2-2210	2210		
				1310						
	50 / 110	6310	62310	2310	7310	3310	21310	310		4310
		6408				5310	22310	2310		

ANTI-FRETTING PASTE

NTN-SNR anti-fretting paste is specially designed to prevent contact corrosion between two steel surfaces.

31

APPLICATIONS

- Contact corrosion, also known as fretting corrosion, appears in assemblies subjected to vibration or very slight slippage or oscillation. It can lead to the serious deterioration of bearings and other machine components and make dismounting very difficult.

ADVANTAGES

- Allows slippage for assemblies with play (wheel bearings, vibrating screens, etc.)
- Preserves the quality of the surfaces and the adjustment of mechanical assemblies by preventing contact (fretting) corrosion
- Facilitates the mounting and dismounting of bearings and components such as nuts, bolts, pins, flanges, couplings, fluted shafts, etc.
- Water and washing resistant
- Temperature range for use -40°C to +150°C

COMMERCIAL REFERENCE

LUB ANTI FRETTING PASTE / 750G

ADJUSTABLE SPANNERS

5 spanners for tightening and loosening up to 30 differently sized nuts.

31

APPLICATIONS

- NTN-SNR adjustable spanners enable the safe and effortless tightening and loosening of all KM, KML and KMK type nuts and also B, TB, BR and TBR precision nuts. They avoid any damage to the nuts or the shaft.

ADVANTAGES

- Made of special tempered steel, these spanners are extremely strong
- The joint with its spring washer guarantees gentle reliable operation
- The laser-etched imprint makes them easily and permanently identifiable
- The hole in the handle makes them easy to store
- They are adaptable to cover nut diameters from 15 to 180 mm.

Available in two versions:

with pins for nuts with holes

with hook for slotted nuts

COMMERCIAL REFERENCE

- with pin: TOOL PS (size) / Pin spanner
- with hook: TOOL HS (size) / Hook spanner

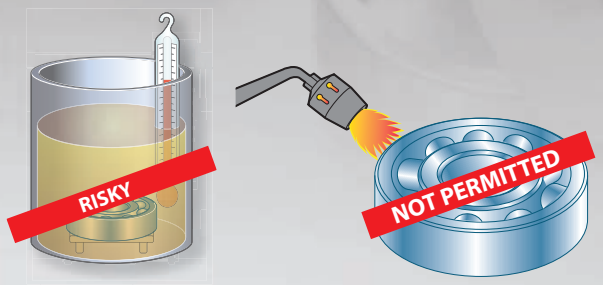
Hot mounting makes it possible, by raising the bearing's temperature, to expand the inner ring so that it can be fitted over the shaft with ease.

- In the event of a tightly fitting outer ring, prior to the insertion of the bearing, the housing can be expanded by heating
- Conversely, a shaft can also be cooled using liquefied gas in order to facilitate its insertion into the inner ring of the bearing.

NTN-SNR's induction heaters provide the best solution in terms of safety, cleanliness and speed compared with oil-bath heating, hot plates or ovens.

Heating with a torch should not be permitted.

It generates local ised temperatures that damage the bearing and so shorten its expected life.

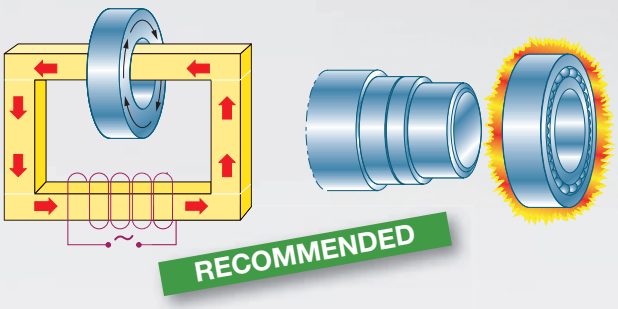


PRINCIPLE OF HEATING BY INDUCTION

The device comprises of a laminated steel core surrounded by a coil with multiple windings. When a current passes through it, this primary coil generates a magnetic field which itself induces an electric current in the bearing (or other steel part), substituted for the secondary coil of an electrical transformer.

When a high-intensity, low-voltage AC current passes through it, the bearing heats up quickly while non-metallic parts and the device itself remain cool.

Induction heating magnetises the bearing. It is therefore necessary for the heater to demagnetise it at the end of the heating cycle. This avoids steel particles being attracted into the bearing later on.



THE WORDS OF AN NTN-SNR EXPERT:

The temperature must not be too high, so as not to change the characteristics of the steel or the internal components of the bearing (maximum 130°C).

On the other hand, the temperature must be high enough to generate sufficient expansion to temporarily reduce the fit and allow easy installation of the bearing.

The heating temperature is a function of the size, on the one hand and the fit of the seat on the other.

As a general rule, the following temperatures are recommended :

Ø bore dia	T° heating temp
Up to 100 mm	+ 90°C
From 100 to 150 mm	+ 120°C
Above 150 mm	+ 130°C

The mounting of a bearing onto a shaft or into a housing requires a certain skill for proper alignment. The use of anti-fretting paste facilitates insertion and protects the shaft or housing from contact corrosion.

The wearing of heat insulating gloves is necessary for the safe and comfortable handling of the heated parts.

In the case of heavy bearings, help will be required for their handling (use of a sling and mobile hoist or even an overhead crane).

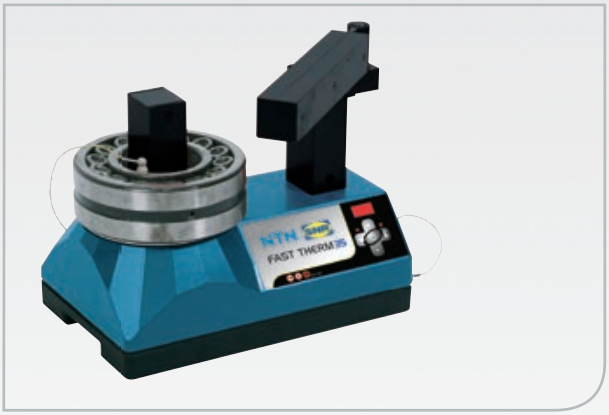
THE RIGHT QUESTIONS TO ASK YOURSELF WHEN SELECTING A HEATING DEVICE :

- How big are the parts to be heated? (Max. external diameter, max. width, min. and max. bore)
- What are the min. and max. weights of the parts?
- What temperature has to be achieved?
- What electrical current and voltage are available in the workshop?

The major advantages of the FAST THERM and SAFE THERM range:

PRACTICAL AND SIMPLE IN USE

- Robust design for use in an industrial environment
- Ready for immediate use
- Requires no maintenance
- The ergonomic, pivoting yoke of the 35 to 300 models facilitates the positioning of the parts to be heated.
- User-friendly; the touch-screen controls can be operated while wearing protective gloves
  - only three buttons are required to programme the portable version (two for setting the temperature (+50°C to +240°C) and one to start)
  - 2 additional buttons on the other versions also enable control of the “heating time” (0 to 99 min).
  - Display of the temperature and time and also error codes for quick trouble-shooting
- Audible signal at the end of the heating cycle
- Choice of °C or °F temperature display



FAST THERM 35

HEATING CONTROL AND SAFETY

- Optimum control of the heating cycle by microprocessor and magnetic temperature probe.
- Quick even heating of parts and no risk of over-heating
- The equipment uses a default temperature of 110°C.
- Maximum heating temperature: +240°C.
- Automatic demagnetising at the end of the cycle.
- Ability to control the heating time to achieve a steady temperature rise and avoid stressing the bearing (Safe Therm 700 and 1200).

➤ The bearing’s initial quality is maintained.

- Stop/start the device via an infrared remote control (Safe Therm 700 and 1200).
- Only the part to be heated is subjected to an increase in temperature (easier handling, no risk of burning)
- Thermal insulation of the magnetic probe
- Meets EEC legislative standards.

➤ Operator safety ensured

ROBUST AND EFFICIENT

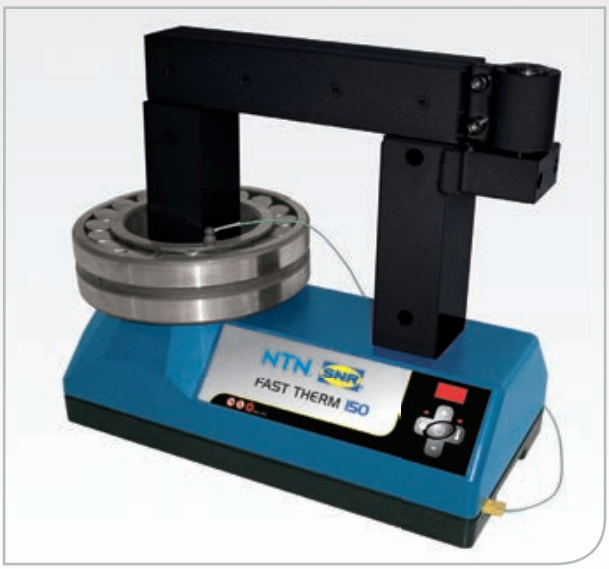
- Robust industrial design, guaranteed for three years.
- Oil-, dust- and water-resistant control screen
- Quick and economical with its TURBO-BOOST operating mode
- In a horizontal position (placed on a polyamide base), the part heats twice as quickly.
- Efficient, it is no longer necessary to heat the same part several times to keep it at the desired temperature.

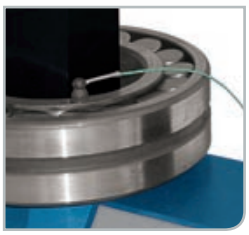
As soon as the temperature drops 5°C, the machine automatically resumes the heating cycle. This resumption occurs over five consecutive cycles.

ECOLOGICAL

- No fumes or oil vapour.
- Excellent energy yield (approx. 80%), thus guaranteeing:
  - Savings in time and energy
  - A longer life for the appliance.

Delivered as standard with a temperature probe, protective gloves and instruction manual.





FAST THERM PROBE

HEATING EQUIPMENT

FAST THERM 20

Portable induction heater.

33

ADVANTAGES

- **Small, light heater**: weighs only 17 kg.
- **Easy to use**, ideal for working on site.
- **Designed** for all bearings and rotating parts with a bore diameter above 20 mm with a maximum diameter of **280 m**m and a maximum weight of **20 kg**.

Delivered as standard with core bars and a sturdy carrying case

COMMERCIAL REFERENCE

- TOOL FAST THERM 20 / Induction heater

FAST THERM 35

Induction heater with pivoting arm, a best-seller for maintenance and production workshops

33

ADVANTAGES

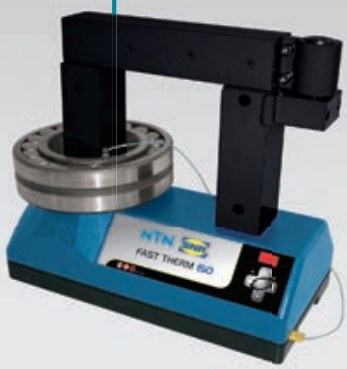
- Used as fixed equipment
- **Compact**, it weighs only 31 kg and can be easily moved using its two side handles.
- **Flexible**: apart from the temperature control mode, it also has, like all the larger models, a heating time control for large parts (shrink-on rings, pinions, pulleys, etc.)
- **Ergonomic**: the standard **pivoting arm facilitates** the loading of the parts to be heated.
- **Designed** for all bearings and rotating parts with a bore diameter above 20 mm with a maximum diameter of **410 mm** and a maximum weight of **35 kg**.

Delivered as standard with a bar for bores of 70 mm and above.
Other available yoke sizes(3) can be ordered to suit the application.

COMMERCIAL REFERENCE

- TOOL FAST THERM 35 / Induction heater

FAST THERM 150



Compact induction heater, economical, providing high heating capacity for bearings of up to 150 kg.

33

ADVANTAGES

- **Ergonomic:** the standard **pivoting arm facilitates** the positioning of parts to be heated.
- Voltage / Current **400 V / 32 A**,
- Designed for all bearings and rotating parts in a horizontal position with a bore diameter over 30 mm with a maximum outside diameter of **490 mm** and a maximum weight of **150 kg**.

Delivered as standard with the core bar for bore diameters of 100 mm or greater. Five other available yoke sizes may be ordered to suit your particular application.

COMMERCIAL REFERENCE

- TOOL FAST THERM 150 / Induction heater

FAST THERM 300

Powerful mobile induction heater for bearings up to 300 kg.

33

ADVANTAGES

- **Ergonomic : thanks to its pivoting yoke the parts** to be heated can be positioned easily.
- Fitted on a trolley with a yoke storage shelf, it can be moved quickly and safely around the various areas of the production floor.
- Voltage / Current **400 V / 32 A**
- Designed for all bearings and rotating parts in a horizontal position with a bore diameter over 30 mm with a maximum outside diameter of **740 mm** and a maximum weight of **300 kg.**

Delivered as standard with a core bar for bores of 100 mm and above.
Other available yoke sizes (6) can be ordered to suit the application.

COMMERCIAL REFERENCE

- TOOL FAST THERM 300 / Induction heater

SAFE THERM 700

Robust, extremely powerful induction heater for heavy parts of up to 700 kg.

34

Machine typically intended for heavy machine workshops
(steel-making, paper, gear manufacturing, naval yards, etc.).

ADVANTAGES

- **Ergonomic:**
  - The core bars are positioned vertically and are equipped with a lifting ring.
  - An optional core bar winch simplifies handling.
  - The control screen is directable for operator comfort.
- **Extremely robust:** the design in steel with a glass-fibre coating makes the Safe Therm 700 particularly resistant to impacts and corrosion.
- Parts may be heated horizontally or vertically. In the vertical position, the parts rest on support rails (they are not suspended on the fixed core bar).
- Voltage / Current **400 V / 63 A**
- Designed for all bearings and rotating parts in a horizontal position with a bore diameter of over 45 mm with a maximum outside diameter of **900 mm** and a maximum weight of **700 kg**.
- Ability to control the heating time to achieve a steady temperature rise and avoid stressing the bearing.
- User safety: The device can be started and stopped remotely by means of a remote control, protecting the operator from excessive exposure to the magnetic field.

Delivered as standard with a core bar for bores of 145 mm and above.
Other available yoke sizes (7) can be ordered to suit the application.

COMMERCIAL REFERENCE

- TOOL SAFE THERM 700 / Induction heater

SAFE THERM 1200

Robust, extremely powerful induction heater for heavy parts weighing up to 1,200 kg.
Indispensable in machine shops in steelworks, paper mills and the rail and wind turbine sectors.

34

ADVANTAGES

- **Ergonomic:**
  - The core bars are positioned vertically and are equipped with a lifting handle.
  - A core bar winch is offered as an option.
  - The directable control screen provides added comfort for the operator.
- **Extremely robust**: made of steel with glass-fibre supports to be heated, particularly resistant to impacts and corrosion.
- Parts may be **heated horizontally or vertically**. In the vertical position, the parts rest on the support rails (they are not suspended on the fixed horizontal core bar).
- Voltage / Current **400 V / 100 A**,
- **Designed** for all bearings and rotating parts in a horizontal position with a bore diameter of over **85 mm** with a maximum outside diameter of 1,500 mm and a maximum weight of **1,200 kg**.
- Ability to control the heating time to achieve a steady temperature rise and avoid stressing the bearing.
- User safety: The device can be started and stopped remotely by means of a remote control, protecting the operator from excessive exposure to the magnetic field.

Delivered as standard with a core bar for bores of 215 mm and above.
Other available yoke sizes (3) can be ordered to suit the application.

COMMERCIAL REFERENCE

- TOOL SAFE THERM 1200 / Induction heater

ACCESSORIES

A lifting device is offered for use with the Safe Therm 700 and 1200.

34

It is easily installed on the heater and is extremely useful in intensive applications and the handling of heavy core bars.

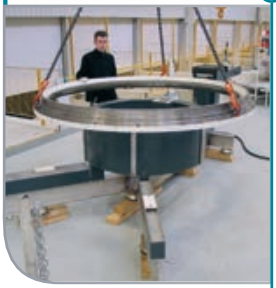
COMMERCIAL REFERENCE

- TOOL FT (Capacity) LIFTING DEVICE

Both the Safe Therm 700 and 1200 can be supplied in a mobile version.

SPECIAL PRODUCTS

NTN-SNR is able to design machines, specially adapted to your application.



This device, especially developed for a wind turbine application, is capable of heating parts of up to 10 tonnes with an outside diameter of 4 metres to a temperature of 120°C in 60 minutes.

Thus, the dimensions and performance of the Safe Therm 700 and 1200 can be modified to match precisely the geometry of your parts, your **production patterns** and the **electrical supply available*** in your workshops. (*from the Fast Therm 150 upwards)

Customised equipment can also be developed for your large metal parts, such as for wind turbine and railway applications.

We can provide you with a quotation based on the following information:

- The weight of the part to be heated (min/max)
- The dimensions of the part (min/max bore, max. outside diameter, max thickness)
- Electrical power and voltage available
- Temperature to be achieved
- Desired heating time or production pattern

▶ The mounting of large bearings with a tapered bore requires considerable effort, difficult to achieve using mechanical screw tightening. The use of hydraulic technology is required in such cases.

Either an oil film is injected over the whole of the contact surface between the shaft and the inner ring. This reduces the friction generated by the mounting and facilitates tightening of the nut.

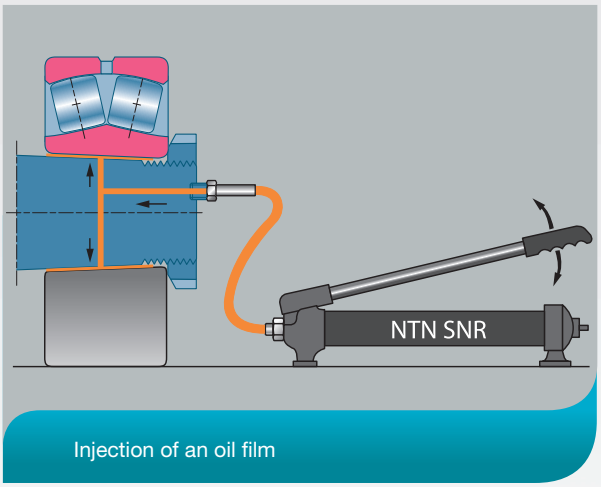
Alternatively oil is sent at very high pressure into a hydraulic nut, which provides the thrust required for mounting the bearing.

The two principles may also be used simultaneously to make mounting easier.

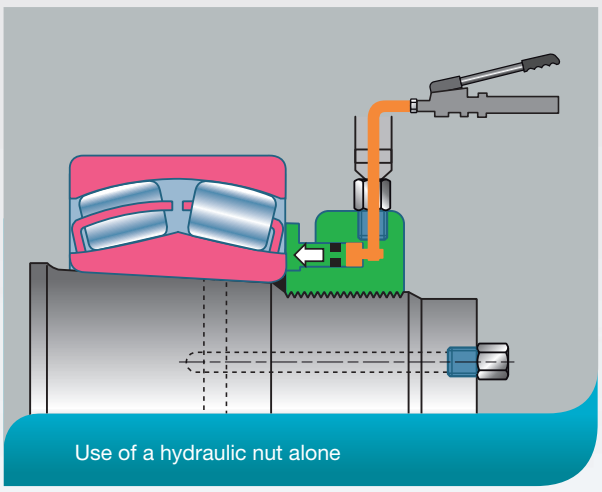
The residual clearance is checked using feeler gauges or a dial gauge is used to measure the 'drive up' (axial displacement) along the tapered contact surface.

Two types of mounting lend themselves to this method :

TAPERED SEAT SHAFTS

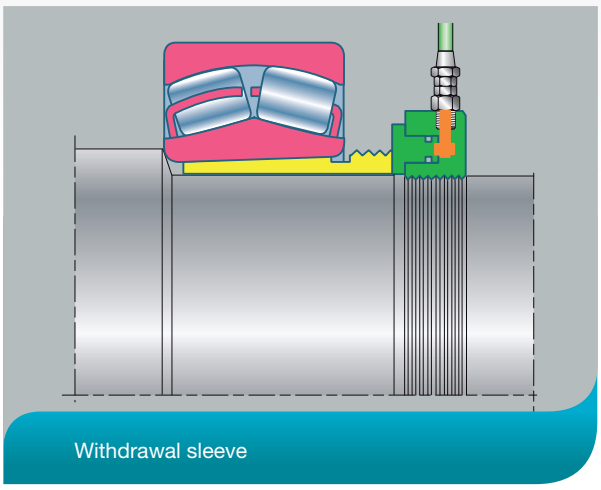


Injection of an oil film

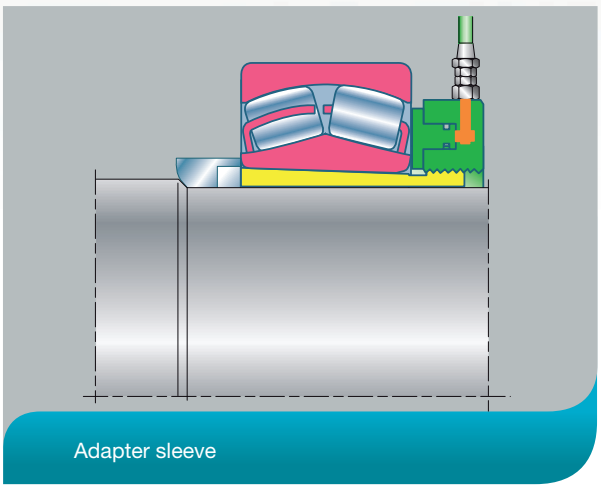


Use of a hydraulic nut alone

SHAFTS WITH A CYLINDRICAL CONTACT SURFACE IN ASSOCIATION WITH A SLEEVE



Withdrawal sleeve



Adapter sleeve

HYDRAULIC NUTS

Precise, effortless mounting of your large bearings with a tool that is always ready for use

35

APPLICATIONS

Beyond a certain shaft diameter, the mounting or dismounting of a bearing on tapered seatings requires hydraulic assistance.

A hydraulic nut ensures perfect control of the adjustment of the assembly while limiting the use of manual force and reducing the time taken for the operation.

ADVANTAGES

Besides the hydraulic principle, the **"back and forth"** design provides unique ease of operation with the automatic return of the thrust plate to the original position (**patented NTN-SNR design**).

"An end to returning the nut to its original position, an often troublesome operation, subject to oil leaks: The NTN-SNR nut is automatically ready for the next operation."

- Wide range of sizes: for shafts from 50 mm to 100 mm in diameter.
- Special sizes on request
- Set of spare piston seals supplied as standard
- The hydraulic nut is equipped with:
  - Two hydraulic connection points, with spot facing for perfect sealing
  - One quick coupling connection (male) which can be positioned on the front face or on the outside diameter, depending on the ease of access.

  The 1500 bar pressure provides maximum safety with a locking stop.
  - One 1500 bar ball valve
  - 1 hole on the front face for a dial indicator (not included)
  - 2 holes on the front face are provided for mounting the dial gauge (not included)
- The surface treatment of the nuts provides excellent protection against corrosion and ensures a long working life.
- Easier handling and nut screwing due to:
  - the knurling of the outer surface (all sizes)
  - a bar being supplied and the provision of several holes on the outer diameter. (For sizes HMV 50 EBF and above)
- Easy handling with eye bolts for nuts HMV 60 EBF and upwards supplied

COMMERCIAL REFERENCE

TOOL HMV (size) EBF / Hydraulic nut

THE RIGHT QUESTIONS TO ASK YOURSELF WHEN SELECTING A HYDRAULIC NUT :

- If it involves mounting onto a shaft with a tapered contact surface: What are the shaft's diameters and thread pitches?
- If mounting onto a sleeve: does it involve an adapter or withdrawal sleeve? Note: for a single cylindrical shaft diameter, the adapter and withdrawal sleeves have different diameters and thread pitches.

MANUAL HYDRAULIC PUMP KITS

A two-stage, high-pressure, ultra-light hand pump, 700 bar (70 mPa) and 1500 bar (150 mPa).

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TOOL PUMP SET 700B

APPLICATIONS

These high-pressure pumps are designed for use with automatic return hydraulic nuts or for the mounting and dismounting of bearings coated with an oil film.

Pumps are supplied as standard with the following accessories designed for use at 700 bar and 1500 bar:

- 1 pressure gauge, minimising the risk of overloading
- 1 high-quality hose (1.5 m for the 700 bar pump with a 0.3 litre reservoir, 3m for the 700 and 1500 bar pumps with a 0.9 litre reservoir)
- 1 quick coupling connection (female) suitable for NTN-SNR hydraulic nuts
- They are supplied filled with hydraulic oil

ADVANTAGES

- Ultra-light, compact design
- Robust reservoir in composite materials
- Ergonomic: locking of the lever to facilitate transport
- Robust: pump guaranteed for life under normal conditions of use
- Efficient: savings in time and effort due to the two stages which allow a reduction of 80% in the number of pump strokes required in comparison with single-stage pumps.
- User safety: electrically isolated lever and safety relief valve
- Flexible: 3 available reservoir sizes:
  - 0.3 litre for HMV 54 EBF nuts and below
  - 0.9 litre for HMV 92 EBF nuts and below
  - 2,5 litres for HMV 200 EBF nuts and below (1500 bar pump)

TOOL PUMP SET 1500B

Accessories included for 750 and 1500 bar pumps

- Pressure gauge (0-700 bar) or (0-1500 bar)
  - Liquid filled to protect against any sudden loss of pressure
  - Dual markings in bars / PSI
  - Fitted with a device protecting against bursting
- Hose (700 or 1500 bar)
  - Very strong thermoplastic, reinforced with layers of woven steel wire
  - Polyurethane envelope for extreme abrasion resistance
  - With a rubber protective “handle”.
- With quick coupling protection (female) 1500 bars, which provides maximum safety with end stop locking and optimum sealing with a flat face valve.

TOOL HYDRAULIC OIL 1L

Technical characteristics of the hydraulic oil

Contains corrosion inhibitors which do not attack sealing materials such as nitrile.

Relative density at 15°C : 0.870 kg/dm³	**Flash point** : 230°C
Viscosity at 40°C : 31 cSt	**Freezing point** : -36°C
Viscosity index : 102	

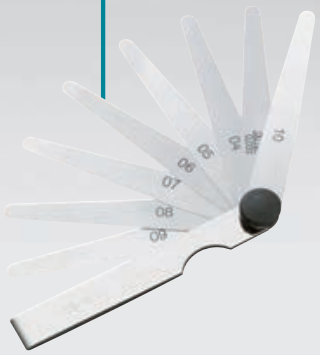
COMMERCIAL REFERENCE

TOOL PUMP SET 700B - (reservoir capacity) L / Pump with accessories
TOOL PUMP SET 1500B - 2,5 L / Pump with accessories
TOOL HYDRAULIC OIL 1 L

SET OF CALIBRATED FEELER GAUGES

A simple and precise tool for measuring the clearance between two parts

39



APPLICATIONS

This feeler gauge set allows the quick, accurate measurement of radial clearance, especially on spherical roller and cylindrical bearings. It contains 17 gauges.

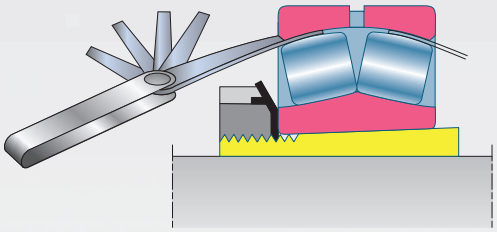
2 versions of the gauge set are offered: 150 mm and 300 mm long

ADVANTAGES

- Set of 17 round end gauges
- Delivered with a spare set of the thinnest gauge blades
- Available in 150 and 300 mm
- In a protective steel sleeve
- Calibrated to 1/100 (from 0.02mm)

COMMERCIAL REFERENCE

FEELER GAUGE TOOL (gauge length)



HEAT-RESISTANT GLOVES

Protective gloves for the safe handling of hot, oily parts up to +350°C.

39

ADVANTAGES

- Made of KEVLAR, they are extremely resistant to tearing, abrasion and cuts
- Non-inflammable: they provide a high level of protection against contact and convective heat.
- They are tested and certified for mechanical (EN 388) and thermal (EN407) hazards
- Non-fluffy, they avoid polluting the bearings.
- Extremely comfortable, they are useful for all maintenance work.
- Single size: 10.5

COMMERCIAL REFERENCE

HEAT RESISTANT GLOVES

LASER TEMP 301
INFRARED THERMOMETER WITH LASER TARGETING

Establish an initial diagnosis of how machines are operating with completely safe and precise remote or contact temperature measurements.

40

APPLICATIONS

The LASER TEMP 301 thermometer combines safety with accuracy.

- The safety of remote infrared measurement for burning, moving or difficult-to-access objects.
- Accurate measurement using the contact probe.

Its elaborate optical system allows small, remote targets to be measured easily and precisely.

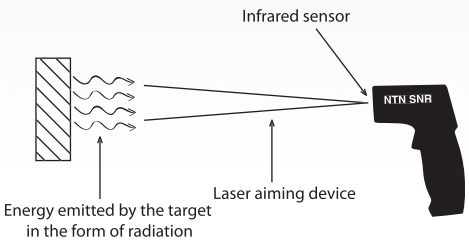
ADVANTAGES

- Wide measurement range in infrared mode: -50°C to +850°C
- High degree of precision, using the
  - laser targeting device
  - the excellent 30:1 distance:target ratio
  - emissivity adjustable between 0.1 and 1
  - type K thermocouple wire probe
- Extremely quick measurements: response time less than 1 sec.
- Internal memory able to record up to 20 measurements.
- Equipped with the following functions:
  - High / low, visual and audible adjustable alarms
  - Automatic switch-off to maximise its useful life
  - Max, min, difference, average measurements
- Light, ergonomic gun shape
- Simple to use, it may be easily configured to work in °C or °F.
- Back-lit display for easy reading.

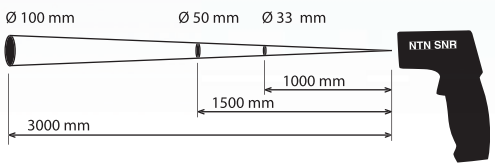
Supplied with: Type K thermocouple wire probe (range -50°C to +440°C, length 1 m)
Protective pouch - User manual

COMMERCIAL REFERENCE

TOOL LASERTEMP 301 / IR Thermometer



Principle



Distance / Target

DISMOUNTING CONTENTS

THE ADVICE OF THE EXPERTS

HYDRAULIC DISMOUNTING P. 22

MECHANICAL DISMOUNTING P. 23

Bore puller ..... P. 23
Puller-separator with mechanical spindle ..... P. 24
Self-centering mechanical puller ..... P. 25
Self-centering hydraulic puller ..... P. 26
Accessory case ..... P. 27
Tri-section pulling plate ..... P. 28

THE ADVICE OF THE EXPERTS

Disassemble cleanly: Look after your equipment and save time, safely.

Attention: the dismounting of bearings is a delicate operation, both for the operator and for the mechanical items involved.

If mounting requires a lot of know-how, the risks involved in dismounting cannot be ignored, even if the bearing is to be scrapped.
By opting for the correct methods and tools, you reduce the risk of personal injury and damaging parts (shaft, housing, even the bearing, if it is to be re-used).

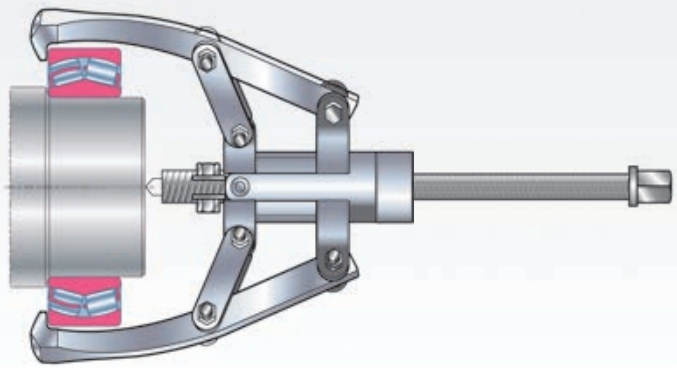
The two main principles for dismounting are mechanical and hydraulic.

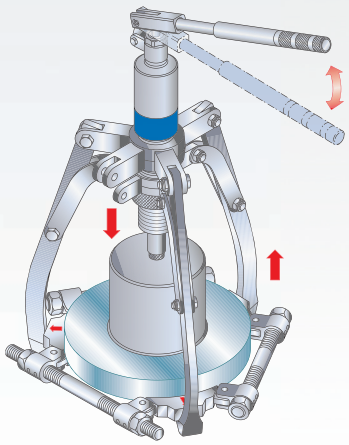
MECHANICAL DISMOUNTING

Whenever possible; apply the withdrawal force to the ring with the interference fit.

There are numerous types of extractor, depending on the grip offered by the bearing, its accessibility and the extraction force required.

Extractors equipped with a pump and hydraulic cylinder allow the operator to develop very high extraction efforts, using their own muscular strength. They are easy to use, due to the fact that their arms are self-centering.





THE RIGHT QUESTIONS TO ASK :

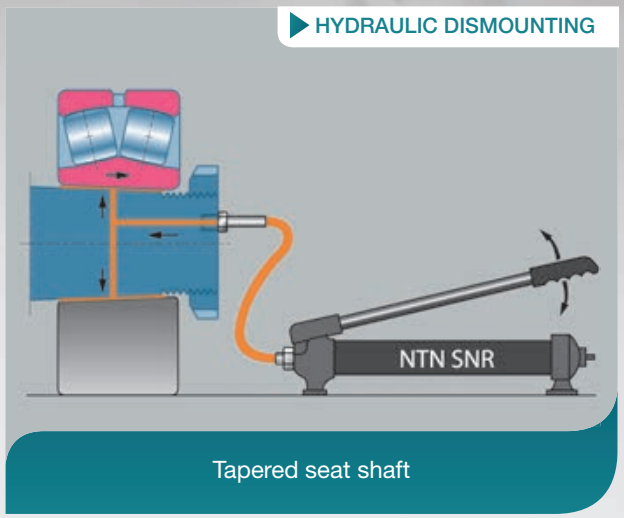
- How do I grip the part?
  Selection of the type of grip: external, internal or special.
- What is the diameter of the part to be extracted?
  Enables the seat, spread and force to be defined.
- How do I pull on the part?
  Choice of a support point: on the central shaft, on the outside of the part or using extraction accessories.

HYDRAULIC DISMOUNTING

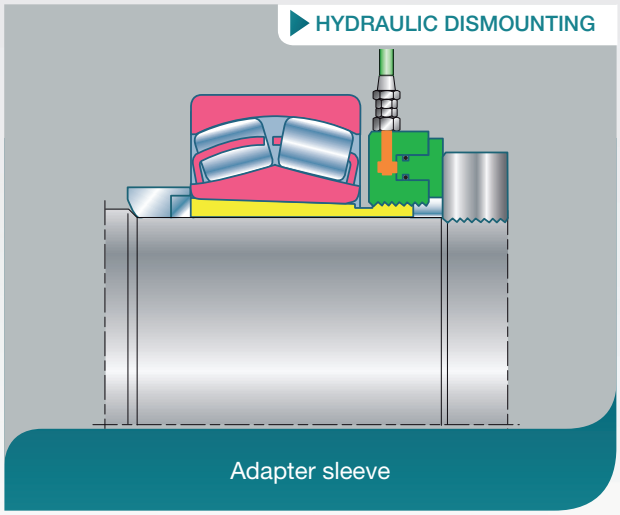
If an adapter or withdrawal sleeve was used during mounting, a hydraulic nut can be used for quick and effortless dismounting.

If hydraulic channels were originally provided in the shaft, the injection of a film of oil on the contact surface between the shaft and the inner ring greatly reduces the effort required.

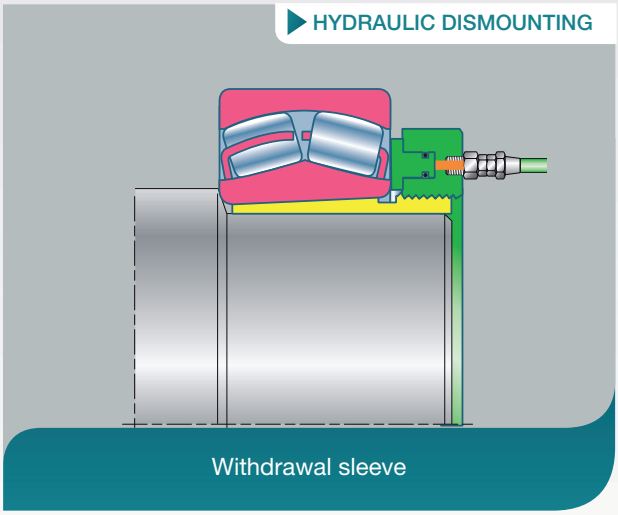
(For more information on hydraulic nuts, please see page 16 of this catalogue).



Tapered seat shaft



Adapter sleeve



Withdrawal sleeve

Extraction of the adapter sleeve with a hydraulic nut

Extraction of the withdrawal sleeve with a hydraulic nut

BORE PULLER

41

Puller kits for internal gripping of the bore.
For quick and easy dismounting of bearings tightly mounted in a housing.

BP SET 35-100

BP SET 12-45

APPLICATIONS

Ideal selection of high-strength extractors with braces for extraction via the bore:
- Bearing whose outer ring is a tight fit in its housing.
- Outer rings or rings with well locked packing.

ADVANTAGES

Robust

- Pullers designed in 2 parts and manufactured in special, strong, break and wear-resistant steel, ensuring a long life.
- Arms in carbonitride steel not requiring any special maintenance

Ergonomic

- Mechanical spindle with handle

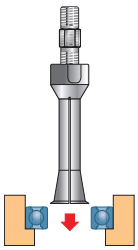
Wide range of use

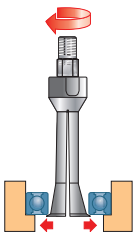
- BP Set 12-45 incudes 6 pullers for 12 to 45 mm bore diameters
- BP Set 35-100 incudes 4 pullers for 35 to 100 mm bore diameters

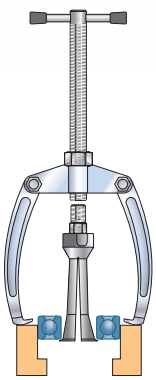
Each kit is supplied in a solid steel case.

COMMERCIAL REFERENCE

BP TOOL SET 12-45 / BORE PULLER
BP TOOL SET 35-100 / BORE PULLER







PULLER-SEPARATOR WITH MECHANICAL SPINDLE

For an easy and safe dismounting of rings or bearings tightly fitted on a shaft and difficult to grip

42

APPLICATIONS

Also allows the extraction of all parts mounted onto a shaft by force, such as pulleys, handwheels and pinions.

The set, supplied in a strong steel case, includes:

- a puller/pusher with 5 ton capacity mechanical spindle.
- extension rods for quick adaptation to required pulling length.
- a 2-blade separator to separate and grip rings and bearings from the rear with an external dimension between 22 and 115 mm.

ADVANTAGES

Practical and safe

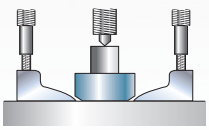
- Gradual simple screw extraction
- The sharp bevelled blades ensure a good grip, so avoiding any locking of the part to be extracted and any deterioration of the shaft's seat.
- After separation by tightening the two blades, turning the separator enables greater force to be used without deforming the blades for the complete extraction of the part

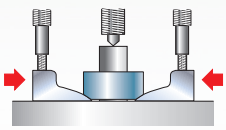
Robust

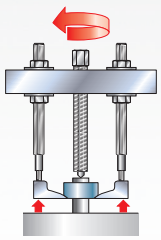
- Separating blades are made of special steel for added strength and durability.
- The arm in carbonitride steel does not require any special maintenance: no more need for oil or grease

COMMERCIAL REFERENCE

TOOL BPM 22-115 / Back puller mech spindle







2/3 ARMS SELF-CENTERING MECHANICAL PULLER

SCMP - 3 arms

A simple, robust and efficient range of pullers for an easy and safe dismounting of small or medium size bearings.

42

APPLICATIONS

Also suitable for removing pulleys, gear wheels, handwheels, etc, fixed to a shaft.

ADVANTAGES

Practical

- The self-centering mechanism ensures the simultaneous positioning of the puller's arms on the bearing.
- Compact and ergonomic, it may be easily operated in every position by one person.

Safe

- Self-locking system prevents the arms from bending or slipping.
- The greater the extraction force, the tighter the jaws grip the part.
- Robust, designed in hardened steel for maximum strength

Multiple uses

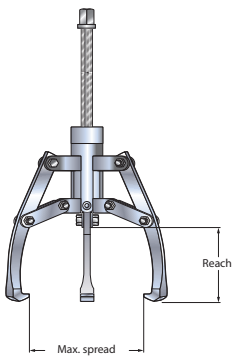
- Quickly convertible to two or three claws, depending on the space available.
- Three available models for selection according to the outside diameter of the parts to be extracted and the required reach. :

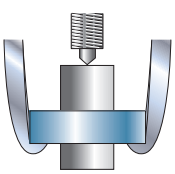
Max. spread mm	Max. reach mm	Capacity Tons
120	80	2
180	120	3
270	160	5

SCMP - 2 arms

COMMERCIAL REFERENCE

TOOL SCMP 2/3-120 / Self-center mech puller
TOOL SCMP 2/3-180 / Self-center mech puller
TOOL SCMP 2/3-270 / Self-center mech puller





2/3 ARMS
SELF-CENTERING HYDRAULIC PULLER

A range of powerful pullers for a safe and easy dismounting of large bearings and force-fitted parts such as pulleys and gear wheels.

43

APPLICATIONS

The self-centering device facilitates positioning and anchoring around the bearing. The power developed by the hydraulic system allows the part to be extracted safely with very little effort.

ADVANTAGES

Practical

- Ready-to-use in a strong case. No assembly of the jaws required before use.
- Compact:the self contained hydraulic pump and cylinder save space. No need for a separate pump, hose or spindle.
- Ergonomic: pump handle pivoting through 360°, allowing the extractor to be used in the most comfortable position. Telescopic, it provides optimum transmission of the effort.
- Easy centering of the piston on the shaft with retractable, integrated point.
- A piston extension is supplied for use with a remote support surface.
- A piston return device makes it ready immediately for further use.
- Long stroke of hydraulic spindle facilitates dismounting in one operation.

SCHP 4T - 3 arms

Multiple uses

- Possibility to change between two or three jaws, depending on the accessibility of the bearing.
- Available in three versions, depending on the power and size required: 4, 12, 20 and 30 tons.

Capacity tons	Max. spread mm	Max. reach mm	Cylinder stroke mm
4	325	190	60
12	485	305	85
20	570	365	111
30*	680	465	111

*30 tons: Available to special order only.

SCHP 4T - 2 arms

- For the 4 and 12-tonne capacity, an accessory kit consisting of a puller block, connecting rods and a set of bearings separators increases the number of uses and makes separation easier.

Safe

- A safety relief valve prevents any risk of overloading and limits the force applied to the maximum capacity of the equipment.
- A cover protects the user from possible flying bearing fragments. Made of transparent material, it provides good visibility for controlling the extraction.
- The 20-ton model is equipped with an innovative two-stage pump which makes operation easier and safer.

COMMERCIAL REFERENCE

TOOL SCHP 4 TONS / Self-center hyd puller
TOOL SCHP 12 TONS / Self-center hyd puller
TOOL SCHP 20 TONS / Self-center hyd puller
TOOL SCHP 30 TONS / Self-center hyd puller

ACCESSORY CASE FOR 4 AND 12-TON SCHP

A strong grip for a safe and easy dismounting.

43

APPLICATIONS

A separator is a complementary tool to a claw extractor when the latter does not have sufficient grip. A perfect grip on the back of parts, using bevelled blades, reduces the force necessary for dismounting and avoids damaging the shaft's contact surface

ADVANTAGES

- Robust design ensuring a long life for the separation blades.
- After separation by tightening the two blades, turning the separator enables greater force to be used without deforming the blades for the complete extraction of the part.
- Easy centering of the piston on the shaft with its retractable, integrated point.
- Two versions are available, depending on the power required. 4 and 12 tons.

COMMERCIAL REFERENCE

TOOL AS-SCHP 4T / acc set hyd puller
TOOL AS-SCHP 12T / acc set hyd puller

TRI-SECTION PULLING PLATE, UNIVERSAL

A strong grip for safe and effective dismounting using a mechanical or hydraulic extractor.

43

APPLICATIONS

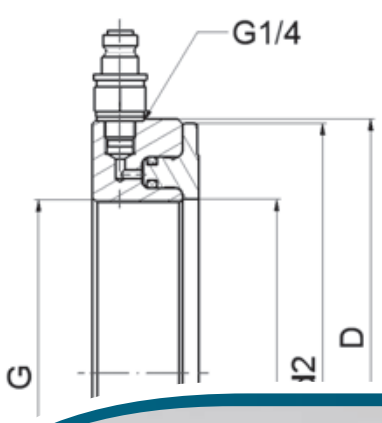
The tri-section pulling plate is the complementary tool to the three-armed pullers when the latter does not have sufficient grip. Universal, it is suitable for both the SCHP 4-tonne hydraulic extractor and the SCMP 270 mechanical model.

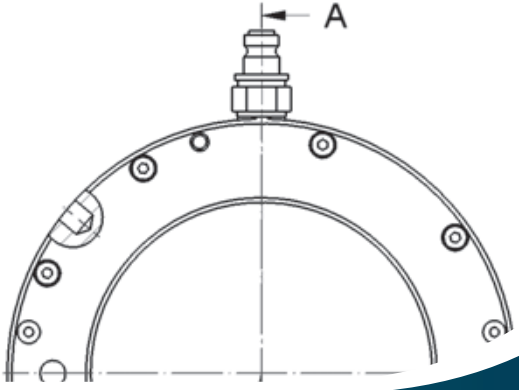
ADVANTAGES

- The blades fix behind the bearing's inner ring, where the extraction force is most effective.
- The application of the effort on the inner ring minimises the risk of damaging the bearing while preserving the rolling body and the outer ring.
- The tri-section construction distributes the extraction force evenly, preventing bearing from locking and/or tilting on the shaft during dismounting.
- Economical: the BP3S 50-210 covers all shafts with a diameter of between 50 and 210 mm. Capacity of 8 Tons max.
- The BP3S 90-340 covers all shafts with a diameter of between 90 and 340 mm. Pulling capacity of 12 Tons max.

COMMERCIAL REFERENCE

TOOL BP3S 50-210 / Tri-section back puller
TOOL BP3S 90-340 / Available to special order only





CONTENTS

TECHNICAL DATAS

TECHNICAL DATAS P. 31

Reference : **LUB ANTI-FRETTING PASTE / B 750G**

➤ P 09

Description	“Contact corrosion” anti-fretting paste
Density	1,23
Colour	Whitish
Texture	Smooth
Base oil	Synthetic
Nature of thickener	Lithium soap
NLGI consistency	1
Temperature range for use	-40°C to + 150°C
Viscosity of the base oil at 40°C, mm²/s	350
Flash point, °C	> 200
Drop point DIN ISO 2176, °C	> 185
Packed	750 g tin

Reference : **TOOL IFT SET 33 / Industry Fitting Tool**

➤ P 07

Description	Mounting tool kit
Application	Cold mounting of bearing with Ø a bore diameter of : 10 to 50 mm Ø Outside diameter : 26 to 110 mm
Contents	33 sockets, three mounting sleeves, 1 dead-blow mallet (weight 0.7 kg)
Material	Socket machined from strong, solid material
Case dimensions	430 x 320 x 100 mm
Weight of kit, including case	4,8 kg

Reference : **TOOL PS (SIZE) / Pin Spanner**

➤ P 09

Description	Articulated manual pin spanner	
Material	Hardened, forged chrome vanadium steel. Satin chrome finish	
Pin hardness	40 HRC	
Use	Tommy nuts (examples of accuracy: TB, TBR, TBP, TBPR)	
Reference :	Nut diameter mm	pin diameter mm
TOOL PS 15-35	15-35	3
TOOL PS 35-50	35-50	4
TOOL PS 50-80	50-80	5
TOOL PS 80-120	80-120	6
TOOL PS 120-180	120-180	8

Reference : **TOOL HS (SIZE) / Hook Spanner**

➤ P 09

Description	Articulated manual hook spanner
Material	Hardened, forged chrome vanadium steel. Satin chrome finish
Use	Slot nuts
Reference :	Diameter of the tightening nut, mm
TOOL HS 15-35	15-35
TOOL HS 35-50	35-50
TOOL HS 50-80	50-80
TOOL HS 80-120	80-120
TOOL HS 120-180	120-180

PRECISION NUT CROSS REFERENCE / tommy nut and slot nut spanners

	spanner 15-35 mm		spanner 35-50 mm		spanner 50-80 mm		spanner 80-120 mm		spanner 120-180 mm	
	Hook	Pin	Hook	Pin	Hook	Pin	Hook	Pin	Hook	Pin
B and TB nuts	B 20/1	TB 20/1	B 25	TB 25	B 35	TB 35	B 60	TB 60	B 90	TB 90
	B 20/1,5	TB 20/1,5	B 30	TB 30	B 40	TB 40	B 65	TB 65	B 95	TB 95
	-	-	-	-	B 45	TB 45	B 70	TB 70	B 100	TB 100
	-	-	-	-	B 50	TB 50	B 75	TB 75	-	-
	-	-	-	-	B 55	TB 55	B 80	TB 80	-	-
	-	-	-	-	B 60	TB 60	B 85	TB 85	-	-
	-	-	-	-	-	-	B 90	TB 90	-	-
BP and TBP nuts	-	-	BP 20/1	TBP 20/1	BP 30	TBP 30	BP 55	TBP 55	BP 75	TBP 75
	-	-	BP 20/1,5	TBP 20/1,5	BP 35	TBP 35	BP 60	TBP 60	BP 80	TBP 80
	-	-	BP 25	TBP 25	BP 40	TBP 40	BP 65	TBP 65	BP 85	TBP 85
	-	-	-	-	BP 45	TBP 45	BP 70	TBP 70	BP 90	TBP 90
	-	-	-	-	BP 50	TBP 50	-	-	BP 95	TBP 95
	-	-	-	-	-	-	-	-	BP 100	TBP 100
BR and TBR nuts	-	-	BR 25	TBR 25	BR 35	TBR 35	BR 60	TBR 60	BR 90	TBR 90
	-	-	BR 30	TBR 30	BR 40	TBR 40	BR 65	TBR 65	BR 95	TBR 95
	-	-	-	-	BR 45	TBR 45	BR 70	TBR 70	BR 100	TBR 100
	-	-	-	-	BR 50	TBR 50	BR 75	TBR 75	-	-
	-	-	-	-	BR 55	TBR 55	BR 80	TBR 80	-	-
	-	-	-	-	BR 60	TBR 60	BR 85	TBR 85	-	-
	-	-	-	-	-	-	BR 90	TBR 90	-	-
BPR and TBPR nuts	-	-	BPR 20/1	TBPR 20/1	BPR 30	TBPR 30	BPR 55	TBPR 55	BPR 75	TBPR 75
	-	-	BPR 20/1,5	TBPR 20/1,5	BPR 35	TBPR 35	BPR 60	TBPR 60	BPR 80	TBPR 80
	-	-	BPR 25	TBPR 25	BPR 40	TBPR 40	BPR 65	TBPR 65	BPR 85	TBPR 85
	-	-	-	-	BPR 45	TBPR 45	BPR 70	TBPR 70	BPR 90	TBPR 90
	-	-	-	-	BPR 50	TBPR 50	-	-	BPR 95	TBPR 95
	-	-	-	-	-	-	-	-	BPR 100	TBPR 100

KM NUT CROSS REFERENCE / Pin tightening spanner

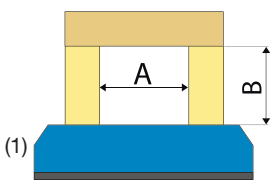
15-35 mm spanner	35-50 mm spanner	50-80 mm spanner	80-120 mm spanner	120-180 mm spanner
KM 0	KM 5	KM 7	KM 12	KM 18
KM 1	KM 6	KM 8	KM 13	KM 19
KM 2	-	KM 9	KM 14	KM 20
KM 3	-	KM 10	KM 15	KM 21
KM 4	-	KM 11	KM 16	KM 22
-	-	KM 12	KM 17	KM 23
-	-		KM 18	KML 24
-	-	-	-	KM 24
-	-	-	-	KM 25
-	-	-	-	KML 26
-	-	-	-	KML 27
-	-	-	-	KML 28
-	-	-	-	KML 28
-	-	-	-	

3- TECHNICAL DATAS

Reference : **TOOL FAST THERM (SIZE) / Induction Heater** ➤ P 11

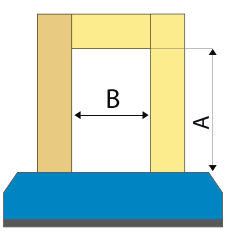
TECHNICAL DATAS	FAST THERM 20	FAST THERM 35	FAST THERM 150	FAST THERM 300
ELECTRICITY				
Max. power consumption	3,6 kVA	3,6 kVA	12,8 kVA	12,8 kVA
Max. voltage/current	230 V / 16 A	230 V / 16 A	400 V / 32 A	400 V / 32 A
Frequency	50 Hz	50 Hz	50 Hz	50 Hz
Other voltages on request	110 V to 240 V	110 V to 240 V	230 V/ 500 V/ 560 V	230 V/ 500 V/ 560 V
Other frequencies on request	60 Hz	60 Hz	60 Hz	60 Hz
CONTROL				
Temperature adjustment	+ 50°C to + 240°C	+ 50°C to + 240°C	+ 50°C to + 240°C	+ 50°C to + 240°C
Heating time adjustment / Max. temperature.	no	0-99 min + 240°C	0-99 min + 240°C	0-99 min ● + 240°C ○ + 400 °C
Temperature probe Ref : Tool +	● TEMP PROBE 400 (+)	● TEMP PROBE 1000 (+)	● TEMP PROBE 1000 (+)	● TEMP PROBE 1000 (+)
Temperature control precision	+/- 2°C	+/- 2°C	+/- 2°C	+/- 2°C
Temperature maintained at end of cycle	●	●	●	●
Automatic demagnetising	Automatic	Automatic	Automatic	Automatic
Residual magnetism	< 2 A / cm	< 2 A / cm	< 2 A / cm	< 2 A / cm
Audible signal	●	●	●	●
APPLIANCE DESIGN				
Dimensions (L x W x H) mm	345 x 200 x 240	420 x 260 x 380	505 x 260 x 440	1060 x 500 x 1100
Space between pivots A and B	120 x 100 mm	180 x 180 mm	210 x 215 mm	330 x 295 mm
Weight (without yokes)	17 kg (with yokes)	31 kg	51 kg	100 kg (trolley included)
Pivoting arm	no	●	●	●
Shelf trolley	no	no	no	●
PARTS TO BE HEATED				
Maximum weight (++)	20 kg	35 kg	150 kg (horizontal)	300 kg (horizontal)
Min. bore dia. (*)	20 mm	20 mm	30 mm	30 mm
Max. bore dia.	280 mm	410 mm	490 mm	740 mm
Max. width	120 mm	180 mm	210 mm	330 mm
STANDARD AND OPTIONAL EQUIPMENT				
Bearing bore dia. ≥	Reference : TOOL (***)			
20 mm	● FT20-YOKE 20	○ FT35-YOKE 20		
30 mm			○ FT150-YOKE 30	○ FT300-YOKE 30
35 mm	● FT20-YOKE 35	○ FT35-YOKE 35		
45 mm			○ FT150-YOKE 45	○ FT300-YOKE 45
60 mm	● FT20-YOKE 60	○ FT35-YOKE 60	○ FT150-YOKE 60	○ FT300-YOKE 60
70 mm		● FT35-YOKE 70	○ FT150-YOKE 70	○ FT300-YOKE 70
85 mm			○ FT150-YOKE 85	○ FT300-YOKE 85
100 mm			● FT150-YOKE 100	○ FT300-YOKE 100
115 mm				● FT300-YOKE 115
130 mm				
145 mm				
215 mm				

● Standard / ○ optional equipment
(*) With min. yoke size / (***) Example : TOOL FT 35-YOKE 20
(+) : Length of probe wire (e.g. 400 = 400 mm)
(++) : For bearings. For other parts, please contact us.



Reference : **TOOL SAFE THERM (SIZE) / Induction Heater**

TECHNICAL DATAS	SAFE THERM 700	SAFE THERM 1200
ELECTRICITY		
Max. power consumption	25 kVA	40 kVA
Max. voltage/current	400 V / 63 A	400 V / 100 A
Frequency	50 Hz	50 Hz
Other voltages on request	230 V/ 500 V/ 560 V	230 V/ 500 V/ 560 V
Other frequencies on request	60 Hz	60 Hz
CONTROL		
Temperature adjustment	+50°C to + 240°C	+50°C to + 240°C
Heating time adjustment / Max. temperature.	0-99 min • + 240°C ○ + 400 °C	0-99 min • + 240°C ○ + 400 °C
Temperature probe Ref : Tool +	• TEMP PROBE 1000 (+)	• TEMP PROBE 1500 (+)
Temperature control precision	+/- 2°C	+/- 2°C
Temperature maintained at end of cycle	•	•
Automatic demagnetising	Automatic	Automatic
Residual magnetism	< 2 A / cm	< 2 A / cm
Audible signal	•	•
APPLIANCE DESIGN		
Dimensions (L x W x H) mm	1100 x 850 x 1250 (**)	1500 x 1100 x 1400 (**)
Space between pivots A and B	440 x 390 mm (**)	470 x 690 mm (**)
Weight (vertical yoke)	350 kg	850 kg
Pivoting arm	No (Vertical bar)	No (Vertical bar)
Bar lifting device Ref : Tool +	○ FT600-Lifting Device	○ FT1200-Lifting Device
PARTS TO BE HEATED		
Maximum weight (++)	700 kg (horizontal)	1200 kg (horizontal)
Min. bore dia. (*)	45 mm	85 mm
Max. bore dia.	900 mm (**)	1500 mm (**)
Max. width	410 mm (**)	440 mm (**)
STANDARD AND OPTIONAL EQUIPMENT		
Bearing bore dia. ≥	Reference : TOOL (***)	
20 mm		
30 mm		
35 mm		
45 mm	○ ST700-YOKE 45	
60 mm	○ ST700-YOKE 60	
70 mm	○ ST700-YOKE 70	
85 mm	○ ST700-YOKE 85	○ ST1200-YOKE 85
100 mm	○ ST700-YOKE 100	
115 mm	○ ST700-YOKE 115	○ ST1200-YOKE 115
130 mm	○ ST700-YOKE 130	
145 mm	• ST700-YOKE 145	○ ST1200-YOKE 145
215 mm		• ST1200-YOKE 215



(2)

• Standard / ○ optional equipment
(*) With min. yoke size / (**) other dimensions on request
(***) Example : TOOL FT 35-YOKE 20
(+) : Length of probe wire (e.g. 400 = 400 mm)
(++) : For bearings. For other parts, please contact us.

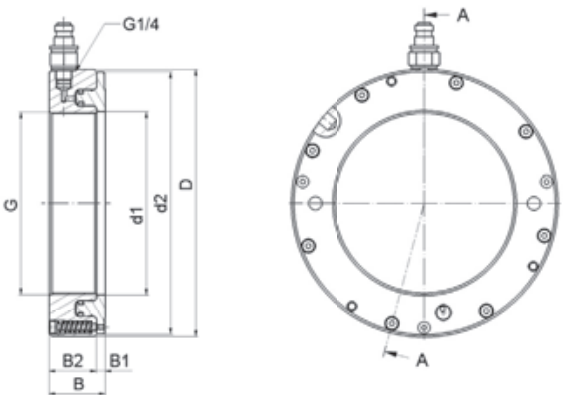
DIMENSIONS (MM) AND WEIGHT (KG) OF YOKES

	FT20	FT35	FT150	FT300	ST700	ST1200
Y20	14x14x200 0,3 kg	14x14x280 0,4 kg				
Y30			20x20x350 1,1 kg	20x20x490 1,5 kg		
Y35	25x25x200 0,9 kg	25x25x280 1,3 kg				
Y45			30x30x350 2,4 kg	30x30x490 3,3 kg	30x30x700 4,7kg	
Y60	40x40x200 2,5 kg	40x40x280 3,4 kg	40x40x350 4,2 kg	40x40x490 5,9 kg	40x40x700 8,4kg	
Y70		50x50x280 5,3 kg	50x50x350 6,6 kg	50x50x490 9,2kg	50x50x700 13,8kg	
Y85			60x60x350 9,4 kg	60x60x490 13,2kg	60x60x700 19,5kg	60x60x850 24kg
Y100			70x70x350 12,8 kg	70x70x490 18kg	70x70x700 26,9kg	
Y115				80x80x490 23,5kg	80x80x700 35kg	80x80x850 42,7kg
Y130					90x90x700 44,5kg	
Y145					100x100x700 55kg	100x100x850 66,8kg
Y215						150x150x850 150 kg

Reference : **TOOL HMV (SIZE) EBF / Hydraulic Nut** ➤ P 16

Description	Hydraulic nut with metric thread. Equipped with automatic piston return device
Materials	
HMV 10 EBF – HMV 40 EBF	Fine metric thread to ISO 965-1998 Tolerance class 6H
HMV 41 EBF – HMV 200 EBF	Trapezoidal thread to ISO 2901-1993 Tolerance class 7H
Nuts **Sizes ≤ HMV 54 EBF** **Sizes ≤ HMV 92 EBF** **Sizes ≤ HMV 200 EBF**	Reference of recommended pumps Pump 700b-0,3L / Pump 700b-0,9L Pump 700b-0,9L Pump 1500b-2,5L
Component Reference - hydraulic nut	
Set of O-rings	Nut Reference followed by / Piston Seals Exemple : TOOL HMV 15 / Piston Seals
Ball valve	1500 bars Reference : TOOL HMV BALL PLUG 1/4
Quick coupling connection (male) **with seal washer and connecting nipple**	1500 bars, male Reference TOOL HMV NIPPLE 1/4 Dimensions: see page 39

A-A (1 : 2)



DIMENSIONS (MM) AND WEIGHT (KG) OF HYDRAULIC NUTS

Sizes	Thread	Outside diameter mm	Total width mm	Piston diameter mm	Permitted piston stroke mm	Flange width mm	Body width mm	Diameter mm	Piston surface mm^2	Weight kg
HMV ... EBF	G	D	B	max. d2		B1	B2	d1		
10	M50x1,5	114	43	110	5	5	38	50,5	2850	2,9
11	M55x2	120	43	116	5	5	38	55,5	3050	3
12	M60x2	125	43	121	5	5	38	60,5	3250	3
13	M65x2	130	43	126	5	5	38	65,5	3500	3,2
14	M70x2	135	43	131	5	5	38	70,5	3650	3,4
15	M75x2	140	43	136	5	5	38	75,5	3850	3,6
16	M80x2	146	43	142	5	5	38	80,5	4150	3,9
17	M85x2	150	43	146	5	5	38	85,5	4300	4
18	M90x2	156	43	152	5	5	38	90,5	4850	4,2
19	M95x2	162	43	158	5	5	38	95,5	5050	4,5
20	M100x2	166	44	162	5	6	38	100,5	5100	4,6
21	M105x2	172	44	168	5	6	38	105,5	5200	4,9
22	M110x2	178	44	174	5	6	38	110,5	5400	5,2
23	M115x2	182	44	178	5	6	38	115,5	5800	5,2
24	M120x2	188	44	184	5	6	38	120,5	5950	5,5
25	M125x2	192	44	188	5	6	38	125,5	6350	5,6
26	M130x2	198	44	194	5	6	38	130,5	6450	5,9
27	M135x2	204	44	200	5	6	38	135,5	6900	6,1
28	M140x2	208	45	204	5	7	38	140,5	7250	6,2
29	M145x2	214	46	210	5	7	39	145,5	7400	6,7
30	M150x2	220	46	216	5	7	39	150,5	7600	6,8
31	M155x3	226	46	222	5	7	39	155,5	8450	7,2
32	M160x3	232	47	228	6	7	40	160,5	8650	7,8
33	M165x3	238	47	234	6	7	40	165,5	8750	8,1
34	M170x3	244	48	240	6	7	41	170,5	9800	8,6
36	M180x3	256	48	252	6	7	41	180,5	11250	9,4
38	M190x3	270	50	266	7	8	42	191	11800	10,7
40	M200x3	282	51	278	8	8	43	201	12100	11,7
41	Tr205x4	288	51	284	8	8	43	207	13050	12,2
42	Tr210x4	294	52	290	9	8	44	212	13400	12,7
43	Tr215x4	300	52	296	9	8	44	217	14050	13,2
44	Tr220x4	306	52	302	9	8	44	222	14800	13,7
45	Tr225x4	312	53	308	9	8	45	227	15150	14,7
46	Tr230x4	318	53	314	9	8	45	232	15450	14,7
47	Tr235x4	326	54	322	10	8	46	237	16600	16,2
48	Tr240x4	330	55	326	10	9	46	242	17250	16,2
50	Tr250x4	342	55	338	10	9	46	252	17550	17,7
52	Tr260x4	356	56	352	11	9	47	262	19150	19,2
54	Tr270x4	368	57	364	12	9	48	272	20350	20,7
56	Tr280x4	380	58	376	12	9	49	282	21050	22,2
58	Tr290x4	390	58	386	13	9	49	292	22350	22,7
60	Tr300x4	404	61	400	14	10	51	302	23600	25,7

DIMENSIONS (MM) AND WEIGHT (KG) OF HYDRAULIC NUTS

Sizes	Thread	Outside diame-termm	Total width mm	Piston diameter mm	Permitted piston stroke mm	Flange width mm	Body width mm	Diameter mm	Piston surface mm²	Weight kg
HMV ... EBF	G	D	B	max. d2		B1	B2	d1		
62	Tr310x5	416	62	412	14	10	52	312	24850	27,2
64	Tr320x5	428	63	424	14	10	53	322	26250	29,7
66	Tr330x5	438	63	434	14	10	53	332	27500	30,2
68	Tr340x5	450	64	446	14	10	54	342	27750	31,7
69	Tr345x5	456	64	452	14	10	54	347	29350	32,7
70	Tr350x5	464	66	460	14	10	56	352	29800	35,2
72	Tr360x5	472	66	468	15	10	56	362	31250	35,7
73	Tr365x5	482	68	478	15	11	57	367	31600	38,7
74	Tr370x5	486	68	482	16	11	57	372	33300	39,2
76	Tr380x5	498	69	494	16	11	58	382	33500	40,7
77	Tr385x5	504	69	500	16	11	58	387	34050	41,2
80	Tr400x5	522	71	518	17	11	60	402	36600	45,7
82	Tr410x5	534	72	530	17	11	61	412	38200	48,2
84	Tr420x5	546	72	542	17	11	61	422	39900	50,2
86	Tr430x5	556	73	552	17	11	62	432	40750	52,7
88	Tr440x5	566	74	562	17	12	62	442	42400	54,2
90	Tr450x5	580	76	576	17	12	64	452	44100	57,7
92	Tr460x5	590	76	586	17	12	64	462	45100	60,2
94	Tr470x5	602	77	598	18	12	65	472	46800	62,2
96	Tr480x5	612	77	608	19	12	65	482	48600	63,2
98	Tr490x5	624	78	620	19	12	66	492	49500	66,2
100	Tr500x5	636	79	630	19	12	67	502	49950	70,2
102	Tr510x6	648	80	642	20	12	68	512	53300	74,2
104	Tr520x6	658	81	652	20	13	68	522	54250	75,2
106	Tr530x6	670	82	664	21	13	69	532	56150	79,2
108	Tr540x6	682	82	676	21	13	69	542	58200	81,2
110	Tr550x6	693	83	687	21	13	70	552	59150	84,2
112	Tr560x6	704	84	698	22	13	71	562	61150	88,2
114	Tr570x6	716	85	710	23	13	72	572	63200	91,2
116	Tr580x6	726	85	720	23	13	72	582	64200	94,2
120	Tr600x6	748	86	742	23	13	73	602	67400	100,2
126	Tr630x6	782	88	776	23	14	74	632	72850	110,2
130	Tr650x6	804	89	798	23	14	75	652	76100	115,2
134	Tr670x6	826	90	820	24	14	76	672	79450	120,2
138	Tr690x6	848	91	842	25	14	77	692	84200	127,2
142	Tr710x7	870	93	864	25	15	78	712	87700	135,2
150	Tr750x7	912	94	906	25	15	79	752	95050	146,2
160	Tr800x7	965	96	959	25	16	80	802	103800	161,2
170	Tr850x7	1020	99	1014	26	16	83	852	114450	181,2
180	Tr900x7	1075	103	1069	30	17	86	902	123950	205,2
190	Tr950x8	1126	103	1120	30	17	86	952	135450	218,2
200	Tr1000x8	1180	105	1174	34	17	88	1002	145700	239,2

Reference : **TOOL PUMP SET 700B-(Reservoir capacity) L / Pump with accessories**
TOOL PUMP SET 1500B 2,5 L / Pump with accessories ➤ P 17

Description	Manual hydraulic pump kit		
Contents	Pump Set 700b-0,3L	Pump Set 700b-0,9L	Pump Set 1500b - 2,5 L
Ⓐ 1 2-stage manual pump	700 bar pump with 0.3 litre reservoir	700 bar pump with 0.9 litre reservoir	1500 bar pump with 2,5 litre reservoir
Ⓑ 1 adapter pressure gauge*	1/4" male, 3/8" female	3/8" male, 3/8" female	1500 bar pressure gauge block
Ⓒ 1 gauge	700 bar	700 bar	
Ⓓ 1 hose	700 bar, length 1,5 m	700 bar, length 3 m	1500 bar, length 3m
Ⓔ 1 quick coupling connector (female)	G ¼ (1500 bar)	G ¼ (1500 bar)	G ¼ (1500 bar)

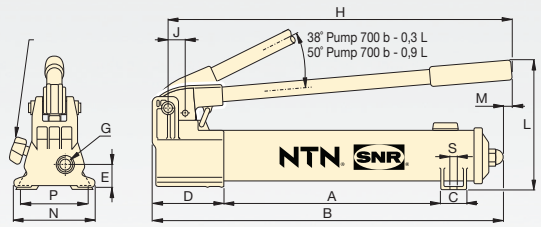
➤➤ Description of the manual hydraulic pump kit components

Ⓐ Reference : TOOL PUMP 700B-(Reservoir capacity) L / TOOL PUMP 1500B 2,5 L

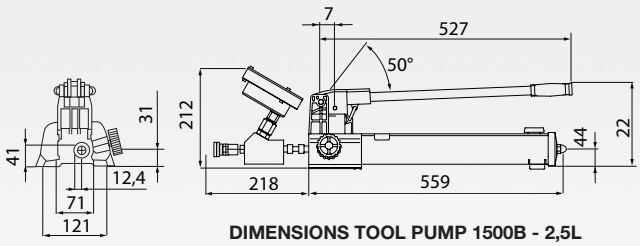
Description	ultra-light, 2-stage hand pump
Materials	Glass fiber renforced composite tank

Reference TOOL +	Nominal pressure 1st stage	Nominal pressure 2nd stage	stroke/ volume 1st stage	stroke/ volume 2nd stage	Reservoir capacity	Weight (bare pump)
PUMP 700b-0,3L	13 bar	700 bar	3,6 cm³	0,9 cm³	320 cm³	2,4 kg
PUMP 700b-0,9L	13 bar	700 bar	11,3 cm³	2,5 cm³	900 cm³	4,1 kg
PUMP 1500b-2,5L	13 bar	1500 bar	11,3 cm³	2,5 cm³	2540 cm³	9 kg

Reference TOOL +	DIMENSIONS (mm)												
	A	B	C	D	E	G	H	J	L	M	N	P	S
PUMP 700b-0,3L	185	336	28	85	28	1/4» - 18 NPTF	319	19	143	-	95	80	7
PUMP 700b-0,9L	344	533	36	99	33	3/8" - 18 NPTF	522	30	177	16	120	-	-



DIMENSIONS TOOL PUMP 700B



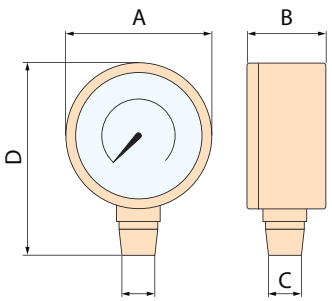
DIMENSIONS TOOL PUMP 1500B - 2,5L

Ⓑ Reference : TOOL GAUGE ADAPTOR (Reservoir capacity) L

Description	Pressure gauge adapter depending on pump		
Reference TOOL+	Pressure gauge orifice	Male end	Female end
GAUGE ADAPTOR 0.3 L	NPTF 1/4”	NPTF 1/4''	NPTF 3/8”
GAUGE ADAPTOR 0.9 L		NPTF 3/8''	

Ⓒ Reference : TOOL PUMP GAUGE 700

Description	Pressure gauge	
Permitted pressure	700 bar (10 000 psi)	
Precision (% full scale)	+/- 1,0 (-1,5%)	
Double graduation	bar / Psi	
Scales	Bar	Psi
Large graduations	100	2000
Small graduations	10	200
Connecting thread C	1/4” NPTF	
Diameter A	63 mm	
Height D	84 mm	
Thickness B	37 mm	



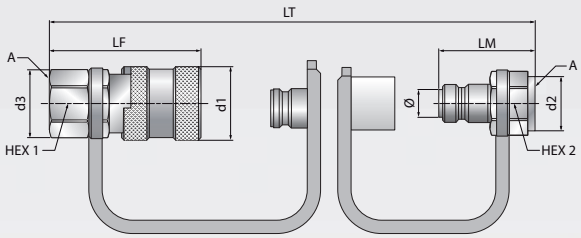
* For the 1500 bar – 2.5L pump, B and C are supplied as a complete unit. For information on «pressure gauge kit» spare parts, please contact us.

Ⓓ Reference : TOOL HYDRAULIC HOSE (Length in mm)

Description	High-pressure hose with quick coupling connector (female)					
Material	Thermoplastic, reinforced with layers of steel and woven wire. Polyurethane envelope					
Reference :	**Max. working pressure, bar**	**Internal diameter, mm**	**Length mm**	**Weight kg**	**End connection 1**	**End connection 2 (female)**
TOOL HYDRAULIC HOSE 1500	700	6,4	1 500	0,8	3/8" - 18 NPTF	G ¼ 1500 bar
TOOL HYDRAULIC HOSE 3000	700	6,4	3 000	1,5	3/8" - 18 NPTF	G ¼ 1500 bar
TOOL 1500B HYDRAULIC HOSE 3000	1500	5	3 000	1,5	1/4 BSPP	G ¼ 1500 bar

Ⓔ Reference : TOOL PUMP COUPLING 1/4

Description of connection on end 2	Quick coupling connection, female
Material	High strength steel. Black zinc treatment
Type of valve	Flat face for maximum discharge of fluid on disconnection
Max. service pressure	1500 bars



Note – Seal washer and connecting nipple included in HMV NIPPLE 1/4 are not represented on the drawing.

Thread A BSPP	d1 mm	d3 mm	Nut Hex1 mm	LF mm	d2 mm	Nut Hex2 mm	LM mm	LT mm	Ø mm	Ref. female : TOOL +	Weight g	Ref male : TOOL +	Weight g
G ¼	28,2	26,8	24	59,5	24,5	22	38	79,5	14,9	PUMP COUPLING 1/4	192	HMV NIPPLE 1/4	69

Reference : TOOL FEELER GAUGES (Gauge length) ➤ P 18

Description	Set of feeler gauges				
Reference	Number of gauges	Measurement range (mm)	Thickness of the gauges (1/100 mm)	Length mm	Weight g
TOOL FEELER GAUGES 150	17	0.02 – 0.5	0,02 0,15 0,03 0,20 0,04 0,25 0,05 0,30 0,06 0,35 0,07 0,40 0,08 0,45 0,09 0,50 0,10	150	85
TOOL FEELER GAUGES 300				300	175

Reference : TOOL GLOVE HEAT RESISTANT ➤ P 18

Description	Heat resistant glove
Material	KEVLAR
Lined	Coton
Single size	10.5
Maximum temperature	350°C
Quantity per packet	1 pair

Reference : **TOOL LASERTEMP 301 / IR Thermometer** ➤ P 19

APPLIANCE CHARACTERISTICS	
Spectral response	8 -14 mm
Optical	D.S : 30:1 (50 mm to 1500 mm)
Response time	Less than one second
Temperature range	From -50 to +850°C
Accuracy*	From -50 to -20°C : ±5°C From -20 to +200°C : ±1.5% of the reading ±2°C From +200 to +538 °C : ±2% of the reading ±2°C From +538 to +850°C : ±3.5% of the reading ±5°C
Display resolution	0.1°C
Emissivity	Adjustable between 0.10 and 1.00 (pre-set at 0.95)
Indication of level exceeded	Screen indication : « -0L » for negative level exceeded, « 0L » or positive level exceeded.
Laser aiming device	Wave length : 630-670 nm output lower than 1mW, class 2 (II)
Indication of positive or negative temperature	Automatic (no indication for a positive temperature). Minus sign (-) for a negative temperature
Screen	4½ digits with backlit LCD screen
Auto switch-off:	After 7 seconds of inactivity
High/low alarm	Flashing signal on screen and audible signal with adjustable thresholds
Supply	9 V alkaline battery
Battery life	38 hr (laser and backlight inactive) 15 hr (laser and backlight active)
Temperature for use	From 0 to +50°C
Storage temperature	From -20°C to +60°C
Relative humidity	Between 10 and 90% in operation and less than 80% during storage
Dimensions	175 x 110 x 45 mm
Weight	230 g (including battery)
Memory	20 temperature values with unit of measurement (°C or °F)

** Accurate for an ambient temperature between 18 and 28°C (with relative humidity below 80%)*

CHARACTERISTICS OF THE K THERMOCOUPLE PROBE	
Temperature range	From -40 to +400°C
Display range	From -50 to +1370°C
Resolution	0.1°C
Accuracy	±1.5% of the reading ±3°C
Cable length	1 m

The devices meet the following standards
1992, electromagnetic emissions
1992, electromagnetic interference

Reference : **TOOL BP SET (size) / Bore Puller** ➤ P 23

Description	Puller kit for internal gripping of the bore	
Contents	BP Set 12-45	BP Set 35-100
• puller	6	4
• arms	2	1
For extraction of bearings with a bore diameter	12 to 45 mm	35 to 100 mm
Case dimensions	460 x 230 x 60 mm	500 x 330 x 90 mm
Weight of kit, including case	5,9 kg	11,8 kg

(1) (2)

➤ Description of case components BP Set 12-45

Puller	Thread	For bearing with bore - mm	Length L - mm	Bolt nut spanner (1)	Weight (g)
1.30/2	M10	12-15	68	10	130
1.30/3	M10	15-19	70	14	140
1.30/4	M10	19-25	76	14	190
1.30/4A	M10	25-30	88	14	300
1.30/5	M10	30-35	88	14	400
1.30/6	M14 x 1,5	35-45	108	17	600

Arm	For Puller	Thread	Arm nut spanner (2)	Weight (g)
1.36/1	1.30/2 - 1.30/5	M10	27	680
1.36/2	1.30/6	M14 x 1,5	32	1540

➤ Description of case components BP Set 35-100

Puller	Thread	For bearing with bore - mm	Length L - mm	Bolt nut spanner (1)	Weight (g)
1.30/6	M14 x 1,5	35-45	108	17	650
1.30/7	M14 x 1,5	45-55	108	17	800
1.30/8	M14 x 1,5	55-70	140	19	1800
1.30/9	M14 x 1,5	70-100	140	27	3050

Arm	For Puller	Thread	Bolt nut spanner (2)	Weight (g)
1.36/3	1.30/6 - 1.30/9	M14 x 1,5	32	3000

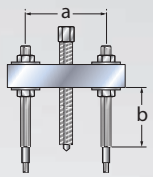
Reference : **TOOL BPM 22-115 / Back Puller Mech Spindle** ➤ P 24

Description	Puller-separator with mechanical spindle
Contents	Ⓐ 1 puller with brace (1 arm + 1 screw + 2 screw braces) Ⓑ 1 separator Ⓒ 1 pair of brace extensions
Case dimensions	376 x 267 x 55 mm
weight of kit, including case	8, 6 kg

➤ Description of components

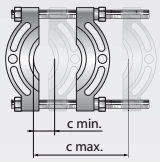
Ⓐ BRACE EXTRACTOR

References	a Min/max spread (mm)	b Max. reach (mm)	Bracing bolts - Separator side / Arm side	Thrust bolt	Screw tightening spanner	Weight (kg)
1.38/2	70-215	250	M14 x 1,5 / M16x 1,5	G ½ x 210	22	3,4



Ⓑ SEPARATOR

References	c Min/max spread (mm)	Thread	Weight (kg)
1.40/2	22-115	M14 x 1,5	2,4

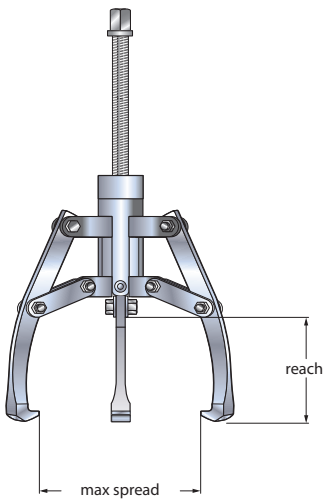


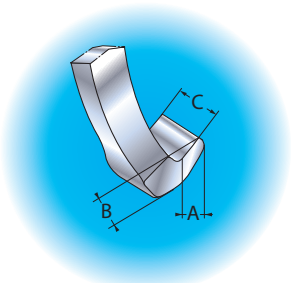
Ⓒ EXTENSIONS (1 PAIR)

References	Max. reach (mm)	Thread	Weight (kg)
1.38/CV	100	M14 x 1,5	0,3

Reference : **TOOL SCMP 2/3-(Max. reach) / Self-Center Mech Puller** ➤ P 25

Description	Combined, self-centering mechanical puller, 2-3 arms							
Type	Capacity (Tons)	Max. reach (mm)	spread		Jaws dimensions			Weight (kg)
			Max (mm)	Min (mm)	A (mm)	B (mm)	C (mm)	
SCMP 2/3-120	2	80	120	36	8	6	15	1.6
SCMP 2/3-180	3	120	180	38	6	7	15	2.3
SCMP 2/3-270	5	160	270	42	11	10	25	4.3

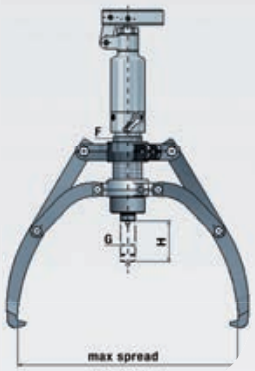


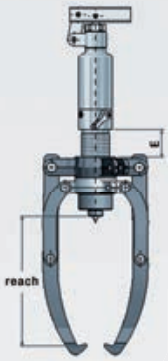


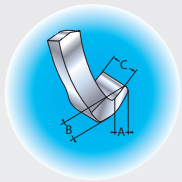
3- TECHNICAL DATAS

Reference : **TOOL SCHP (Capacity) TONS / Self-Center Hyd Puller** ➤ P 26

Description	Combinated, self-centering hydraulic puller, 2-3 arms											
Type	Capacity (tons)	Max. gripping distancei (mm)	Cylinder stroke H (mm)	Spread		Dimensions (mm)						Weight(kg) product only
				Maxi (mm)	Mini (mm)	A	B	C	E	F	G	
SCHP 4 Tons	4	190	60	325	68	13	10	22	40	42	22	9
SCHP 12 Tons	12	305	85	485	90	15	16.5	29	70	60	28	17
SCHP 20 Tons	20	365	111	570	120	20	27	33	62	80	40	28
SCHP 30 Tons	30	465	111	680	120	20	27	38	85	98	50	39







Reference : **TOOL AS-SCHP (Hydraulic extractor capacity) T / Acc set hyd puller** ➤ P 27

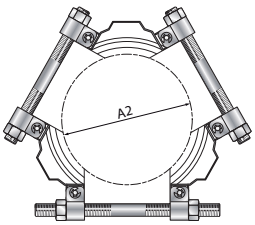
Description	Accessories case for self-centering hydraulic puller		
Contents	1 pulling arm / 2 braces / 1 separator, 2 blades with 2 threaded studs		
Reference	Length of braces (mm)	min/max spread (mm)	Weight with packaging (kg)
AS-SCHP 4 T	250	25 - 110	6
AS-SCHP 12 T	325	80 - 225	21

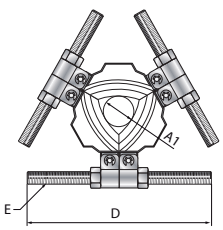
Reference : **TOOL BP3S 50-210 / TRI-SECTION PULLING PLATE** ➤ P 28

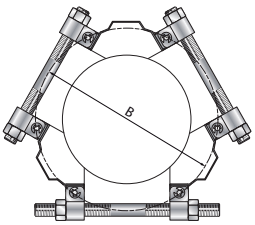
Description	Three-blade extraction plate
Materials	Forged steel alloy

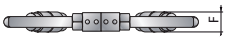
DIMENSIONS

Min/max shaft diameter (A1) / (A2) (mm)		Capacity Tons	Max spread B (mm)	Length D (mm)	Thread E	Thickness F (mm)	Weight (kg) product only
50	210	8	280	285	3/4" – 16 UNF	31	5,5
90	340	12	460	430	7/8" – 16 UNF	45	16,5

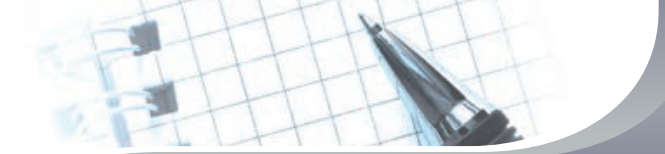








REFERENCE	DESCRIPTION	Catalogue page	Technical datas pages
LUB ANTI-FRETTING PASTE / B750G	Contact corrosion anti-fretting paste	P 09	P 31
TOOL AS-SCHP (Capacity) T / Acc. Set Hyd Puller	Accessories for self-centering hydraulic puller	P 27	P 43
TOOL BP SET (Min size / Max size) / Bore Puller	Puller kit with internal gripping of the bore	P 23	P 41
TOOL BP3S 50-210 / Tri-Section Back Puller	Tri-section pulling plate	P 28	P 43
TOOL BPM 22-115 / Back Puller Mech Spindle	Puller-separator with mechanical spindle	P 24	P 42
TOOL FAST THERM (Capacity) / Induction Heater	Portable induction heater	P 11	P 33
TOOL FEELER GAUGES (Length)	Set of feeler gauges	P 18	P 39
TOOL FT (Capacity) LIFTING DEVICE	750 bars lifting device for heater	P 14	P 34
TOOL FT (Capacity) - YOKE (Bore min)	Single yoke for induction heater	P 11	P 33
TOOL GLOVE HEAT RESISTANT	Thermal insulation gloves	P 18	P 39
TOOL HYDRAULIC HOSE (Length mm) TOOL 1500b HYDRAULIC HOSE 3000	High-pressure hose with quick coupling connector (female)	P 17	P 39
TOOL HYDRAULIC OIL 1L	Oil for pump 700b and 1500b	P 17	P 17
TOOL HMV (Size) / Piston Seals	Set of O-rings for hydraulic nut	P 16	P 35
TOOL HMV (Size) EBF / Hydraulic Nut	Hydraulic nut with metric thread and piston return device	P 16	P 35
TOOL HMV BALL PLUG 1/4	¼" gas ball valve	P 16	P 35
TOOL HMV NIPPLE 1/4	Quick coupling connector, ¼" gas (male)	P 16	P 39
TOOL HS (Min size / Max size) / Hook Spanner	Articulated manual hook spanner	P 09	P 31
TOOL IFT SET 33 / Industry Fitting Tool Set	33-piece mounting tool kit	P 07	P 31
TOOL LASERTEMP 301 / IR Thermometer	Infrared thermometer with laser targeting, aiming ratio 30:1	P 19	P 40
TOOL PUMP GAUGE 700	Pump pressure gauge, 700 bars	P 17	P 38
TOOL GAUGE ADAPTOR (Reservoir capacity)	Pressure gauge adapter depending on pump	P 17	P 38
TOOL PS (Min size / Max size) / Pin Spanner	Articulated manual pin spanner	P 09	P 31
TOOL PUMP COUPLING 1/4	Quick coupling connector, ¼" gas (female)	P 17	P 38
TOOL PUMP SET 700B - (Reservoir capacity)) L / Pump with accessories	Ultra-light, 2-stage hand pump	P 17	P 38
TOOL PUMP SET 1500B - 2,5 L / Pump with accessories	Hand pump kit with accessories	P 17	P 38
TOOL SAFE THERM (Capacity) Induction Heater	Induction heater	P 13	P 34
TOOL SCHP (Capacity) TONS / Self-Center Hyd Puller	Self-centering hydraulic puller	P 26	P 43
TOOL SCMP 2/3 - (Max. spread) / Self-Center Mech Puller	Self-centering mechanical puller	P 25	P 42
TOOL TEMP PROBE (Size)	Temperature probe for induction heater	P 11	P 33



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